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L. C. Hanson
Company
Coalridge Mine
Project, MT A/E
86-46-133,
Sheridan County,
Montana

FINAL REPORT

COALRIDGE MINE PROJECT
MT A/E 86-46-133
SHERIDAN COUNTY, MONTANA

December, 1987

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FINAL REPORT

COALRIDGE MINE PROJECT
MT A/E 86-46-133
SHERIDAN COUNTY, MONTANA

December, 1987

Prepared for:

MR. RICHARD JUNTUNEN, CHIEF
Abandoned Mine Reclamation Bureau
Department of State Lands
1625 11th Avenue
Helena, MT 59620

Prepared by:

L.C. HANSON COMPANY
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JAMES E. HODGES, P.E.	KEVIN REDMOND, E.I.T.
Project Engineer	Project Inspector

L. C. HANSON COMPANY
CONSULTING ENGINEERS & SURVEYORS
HELENA — GREAT FALLS — GLENDIVE

FINAL REPORT

COALRIDGE MINE PROJECT

I. INTRODUCTION

A. Project Objectives

The COALRIDGE MINE Project objectives were primarily surface reclamation to eliminate existing hazardous subsidence holes and mine openings; to dispose of existing mine-related hazardous structures and debris; and to reduce the possibility of future abandoned mine subsidence.

B. Project Location

The COALRIDGE MINE Project is located 4 miles south and 16 miles east of Plentywood, MT in the southeast quarter of Section 13, Township 34 North, Range 57 East, P.M.M., Sheridan County, Montana.

C. Site Description

The site lies west of Montana Highway No. 516 and is primarily rangeland containing numerous subsidence holes, slump areas, shafts, abandoned mine-related structures and mining debris. The westerly limits of the area affected by mining were delineated by the landowner's use of the area. The landowner cultivated areas which appeared to be unaffected by mining; however, the cultivation limits had been moved further west in recent years when additional subsidence holes opened. The total surface area affected by mining as delineated by the cultivation limits is approximately 80 acres. One hole opened under the landowner's tractor and cultivator and dropped the equipment and operator approximately 8 feet.

Numerous structures existed on the site which were abandoned when subsidence began occurring around them.

D. History

Coal mining at the COALRIDGE site was first begun in 1915 by two individuals with separate mines in the SE 1/4 SE 1/4 of Section 13 and in the NE 1/4 SE 1/4 of Section 13. The Acme Coal Mine Company was incorporated in 1918. The Acme Coal Mine Company operated each year during the fall and winter until 1958. The mine was operated as a cooperative to provide fuel to local farmers and ranchers and produced from 7,000 to 11,500 tons of coal annually.

The Acme Coal Mine Company sold the mine to Melvin Brenteson in 1958 when demand for coal declined. Mr. Brenteson operated the mine until 1968 when it was closed due to declining demand for coal and increased safety requirements which made mine operation economically unfeasible.

Mine maps were not maintained during early operations and were only available for those areas mined in later years. The coal was mined using the room and pillar method with the pillars reportedly removed as mining was completed in an area.

II. DESCRIPTION OF PROJECT RECLAMATION

A. Project Planning

The COALRIDGE MINE Project was the second stage of reclamation at the Coalridge Mine. The first stage, titled COALRIDGE EMERGENCY NO. 1, consisted of identifying potential underground abandoned mine-related hazards to the public road right-of-way which is along the site and backfilling the mine voids found to eliminate or minimize the potential for collapse under the roadway. The

initial project was completed in August, 1986.

Planning for the second stage reclamation was begun by L.C. Hanson Company in the spring of 1986. Subsidence at the site was active as indicated by the opening of new holes as well as ground cracking and the slumping of large areas.

Backfilling all the mine voids to prevent future subsidence was determined to be economically unfeasible. The ponding of surface water in slump areas and in subsidence holes appeared to accelerate the occurrence of slump and subsidence. L.C. Hanson Company determined that backfilling existing subsidence holes, regrading those areas with multiple subsidence holes and establishing positive drainage of runoff across the site would be the most feasible means of eliminating existing hazards and reducing the occurrence of future subsidence. This project did not attempt to eliminate the possibility of subsidence and it is highly probable that subsidence will continue on the site due to the condition of the underground mine workings and the history of subsidence on the site.

B. Chronological History

A pre-bid meeting was held on site on May 13, 1987 for interested bidders and other parties. Fifteen different Contractors were represented at the pre-bid meeting. Bids submitted by 10 Contractors were opened for the reclamation work on May 28, 1987. Christensen Construction Co., Inc., of Antelope, MT, was awarded the general Contract on June 1, 1987. The Agreement was signed on June 8, 1987 and the Notice to Proceed effective June 23, 1987 was issued on June 18, 1987.

On June 19, 1987, a pre-construction meeting was held on site with representatives of the Contractor, Engineer, landowner and the Department of State Lands present. Construction started on

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June 23, 1987 and work was temporarily stopped on September 8, 1987 with only seeding and fertilizing remaining to be completed during the fall seeding period. Seeding and fertilizing were completed on October 27, 1987.

C. Equipment Used

The following equipment was used on the COALRIDGE MINE Reclamation Project:

3 - Terex TS14 Scrapers with sideboards
1 - Case 580D Backhoe/Loader
1 - John Deere 2440 Tractor w/post driver
1 - John Deere 4230 Tractor
2 - Terex 82-30 Crawlers w/12' blades
1 - Catepillar 225 Hoe w/1 C.Y. bucket
1 - Champion 740 Grader
1 - International 630 Hoe
1 - Chevrolet C-60 2-ton Dump Truck
1 - Dynapac CA25 Vibratory Roller
1 - International Transtar w/5000 gallon water tank and 4000 gallon pony trailer
1 - Terex 72-40 Loader
1 - Contractor's custom-made mulch spreader (modified hay feeder)
1 - Contractor's custom-made mulch tucker
1 - John Deere 28' Disc
1 - Mechanical Rock Picker
1 - Marliss No-till Drill

The scrapers and crawlers were used for stripping and stockpiling the topsoil; loading, hauling and disposing of waste piles as subsidence backfill; excavating drainage ditches; excavating, hauling and placing borrow material; and replacing topsoil. The scrapers and crawlers were routed and operated to provide compaction in backfill areas.

The grader was used for shaping topsoil stockpiles, maintaining haul routes, finish grading completed areas, ground scarification, and replacing topsoil.

The hoes were used for topsoil stripping from within shafts and subsidence holes, bank caving, excavation in attempts to open shafts, placement of bank protection rock, and excavation around the pond.

The vibratory roller was used to provide compaction in subsidence backfill operations.

The backhoe/loader was used in structure demolition and for loading debris into the dump truck for disposal.

The Contractor used his mulch spreader and mulch tucker for mulching operations. The fertilizer and seed were applied in a single pass with the no-till drill.

D. Construction Operations

Reclamation work on the project generally followed the order specified in the Special Provisions with some operations being performed concurrently.

Construction operations proceeded generally as planned with the following exceptions:

Removal of Structures - Additional foundations and cisterns were discovered outside the construction limits. A Work Directive Change and a Change Order were executed to provide for removal of those structures.

Bank Caving - Bank caving operations were necessary at six new

holes which opened during reclamation activities. Bank caving was also used to excavate a large void discovered at Shaft No. 5.

Water Injection and Flooding - Activities performed under this bid item were generally not successful in opening shafts and holes for backfilling. The soil in the area is a very sticky clay which seals openings and which is not easily eroded. Also, heavy rains filled most holes, practically eliminating the need for flooding in many of the holes.

Waste Pile Disposal - Work on this item was performed generally as planned except that because the shafts did not open, the waste material had to be hauled to subsidence holes on the south portion of the site to be used as backfill instead of being used as backfill in the nearby shafts.

Backfill Borehole Into Void - The Contractor attempted to backfill Shaft No. 5 as a borehole into void, however, after two attempts to fill the hole with concrete failed, the hole was visually inspected with a light and a large void located. The void was then excavated open and backfilled. Shaft No. 4 was located and found to be open. It was backfilled as a Borehole Into Void as specified.

Close Mine Openings - Shaft - As stated under Water Injection and Flooding, the shafts did not open so it was not necessary to close them.

Ditch Excavation - The ditches were constructed as planned except "A" Ditch from 17+00 to 24+00 where the west slope was flattened to a 4:1 to obtain additional material for use as backfill. The pond slopes were varied in some areas to avoid damage to existing tree roots.

Subsidence Grading - Area 1 - The ditch in Subsidence Grading

Area No. 1 had to be realigned and grades flattened from those designed due to differences between the aerial mapping and field elevations.

III. COST SUMMARY

A. Final Payment Request and Reconciliation Change Order

A copy of the Final Payment Request and Reconciliation Change Order are contained in Appendix A. These documents contain the final quantities and costs for each work item.

B. Change Orders

Change Order No. 1 - Item #1 - The Contractor attempted to backfill Shaft No. 5 as a Borehole Into Void as per plan. He supplied additional concrete in a good faith attempt to fill the shaft. When the additional concrete did not fill the shaft, the shaft was lamped and a large void was discovered. This Change Order was to provide payment for the additional concrete.

Change Order No. 2 - Item #1 - Plans for Subsidence Grading Area No. 1 were prepared based upon aerial mapping. Ground surveys at the start of construction showed the actual conditions varied from the mapping and that grades had to be flattened to accomplish project goals. The Owner determined that the grade changes resulted in extra work for the Contractor and that the Contractor was entitled to additional compensation. An adjustment was negotiated based upon unit prices for other work items.

Change Order No. 3 - Item A - Additional mine-related concrete foundations and cisterns were discovered just outside the project limits. The additional work to demolish them and provide for a more complete project cleanup was paid for at equipment rental

rates.

Change Order No. 3 - Item B - A subsidence hole opened at the nearby MEYER MINE SITE. Backfilling this subsidence as part of the COALRIDGE MINE Project was determined by the Owner to be the most efficient means to accomplish timely repairs. Work was paid for at equipment rental rates and a price was negotiated for providing topsoil.

Change Order No. 3 - Item C - Reconciliation of Final Quantities.

Change Order No. 3 - Contract Time - The Contract time was adjusted to allow credit for inclement weather days, work on Change Order No. 2, work on Items A and B of this Change Order, and for additional work due to an increase in the amount of area that was revegetated.

C. Costs Per Site/Unit

COST SUMMARY

ITEM	TOTAL COST	UNITS	COST/UNIT
Mobilization	$ 3,383.00	Site	$ 3383.00/Site
Removal of Structures	$ 2,088.00	Site	$ 2088.00/Site
Debris Cleanup	$ 2,100.00	80 Acres	$ 26.25/Acre
Salvage and Replace Topsoil	$27,246.95	28681 C.Y.	$ 0.95 C.Y.
Bank Caving	$ 1,044.00	12 Hours	$ 87.00/Hour
Water Injection and Flooding	$ 1,606.00	146 MGal	$ 11.00/MGal
Waste Pile Disposal	$ 1,574.00	*3935 C.Y.	$ 0.40/C.Y.
Backfill Borehole into Void	$ 700.00	2 Each	$ 350.00/Each

ITEM	TOTAL COST	UNITS	COST/UNIT
Ditch Excavation	$ 5,776.00	7220 C.Y.	$ 0.80/C.Y.
Type 4 Bank Protection	$ 1,107.00	82 C.Y.	$ 13.50/C.Y.
Subsidence Backfill	$13,412.75	16002 C.Y.	$ 0.84/C.Y.
Subsidence Grading-Area No. 1	$ 8,127.36	12.6 Acres	$ 645.03/Acre
Subsidence Grading-Area No. 2	$ 2,960.00	2.3 Acres	$ 1286.96/Acre
Provide Water	$ 4,862.00	442 MGal	$ 11.00/MGal
Revegetation	$44,021.60	28.00 Ac	$ 1572.20/Acre
Farm Fence**	$ 1,698.08	1039 L.F.	$ 1.63/L.F.
Remove Fence	$ 113.00	565 L.F.	$ 0.20/L.F.

* Estimated Cubic Yards
** Includes gates, double panels and single panels

IV. SUMMARY

A. Completed Reclamation

The reclamation work was completed to the satisfaction of the Owner, Landowner and Engineer at a cost 2.7% over the Contract bid price. The total cost of the project was $123,116.72. The Contractor used 83 days of Contract time to complete the work. This was the total number of days of Contract time allowed including credit for inclement weather and work done under Change Orders.

B. Comments

Christensen Construction Company personnel completed the project using high quality workmanship and were very cooperative in working to achieve the project goals.

The only conflicts that arose during the project were related to the differences between estimated and actual quantities for both unit price and lump sum items. The relationship of quantity estimates to the method of payment cannot be overstressed at both the pre-bid and pre-construction meetings. No matter how clear the specifications are written, Contractors by nature will not examine them thoroughly until they feel there is a problem; therefore, informing the Contractor is a very important important role of both the pre-bid and pre-construction meetings.

V. SLIDES

The slides and slide log are contained in Appendix B.

APPENDIX A

Payment Request No. 3 (Final)

From: September 9, 1987 To: October 27, 1987

Project Name: COALRIDGE MINE PROJECT

Sheridan County, Mt. Project No.: 86-46-133

Name Of Contractor: Christensen Const. Address: Box 24--R.R.1, Antelope, Mt. 59211

Summary Of Project Status

Amount of Original Contract	$119,887.89
Amount of Approved Change Order(s)	3,279.08
TOTAL CONTRACT AMOUNT	123,166.97
Contract Time Used to Date	83 Days
Percentage of Contract Time Used	100%
Percentage of Contract Amount Earned	100%
Original Contract Amount Completed	118,213.38
Change Order(s) Amount Completed	4,953.59
Amount for Materials On Site	0.00
TOTAL To Date	123,166.97
Times 90% = No Retainage	
TOTAL AMOUNT Earned To Date	123,166.97
Less Previous Amount Earned	98,955.87
Amount Payable This Period	24,211.10
Less 1% Gross Receipts Tax	242.11
TOTAL DUE CONTRACTOR THIS PERIOD	$23,968.99

Requested By: ______________________ (Contractor) Date: ____________

Checked By: L.C. Hanson Co. Allan W. Nye (Engineer) Date: 1/22/88

Approved By: Department of State Lands ______________________ (Owner) Date: 1/22/88
Abandoned Mine Reclamation Bureau

PAY REQUEST NO. 3

L.C Hanson Co.

PROJECT: COALRIDGE MINE PROJECT MONT A/E 86-46-133 Page 2 Of 4

ITEMIZATION OF QUANTITIES AND COSTS

ITEM NO.	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	% OF EST. QUANT. COMP.
1	MOBILIZATION	1.0 L.S.	3383.00	0.00	1.00	3383.00	100*
2	REMOVAL OF STRUCTURES	1.0 L.S.	2088.00	0.00	1.00	2088.00	100*
3	DEBRIS CLEANUP	1.0 L.S.	2100.00	0.00	1.00	2100.00	100*
4	SALVAGE & REPLACE TOPSOIL	31245.0 C.Y.	0.95	0.00	28681.00	27246.95	100*
5	BANK CAVING	10.0 HOURS	87.00	0.00	12.00	1044.00	100*
6	WATER INJECTION & FLOOD.	309.4 MGAL.	11.00	0.00	146.00	1606.00	100*
7	WASTE PILE DISPOSAL	1.0 L.S.	1574.00	0.00	1.00	1574.00	100*
8	BACKFILL B.H. INTO VOID	1.0 EACH	350.00	0.00	2.00	700.00	100*
9	CLOSE MINE OPEN.-SHAFT	850.0 C.Y.	8.50	0.00	0.00	0.00	100*
10	DITCH EXCAVATION	7570.0 C.Y.	0.80	0.00	7220.00	5776.00	100*
11	TYPE 4 BANK PROTECTION	110.0 C.Y.	13.50	0.00	82.00	1107.00	100*
12	SUBSIDENCE BACKFILL	13815.0 C.Y.	0.85	0.00	12223.00	10389.55	100*
13	SUBS. BACKFILL-BORROW	100.0 C.Y.	0.80	0.00	3779.00	3023.20	100*
14	SUBS. GRADING - AREA 1	1.0 L.S.	4521.00	0.00	1.00	4521.00	100*
15	SUBS. GRADING - AREA 2	1.0 L.S.	2960.00	0.00	1.00	2960.00	100*
16	PROVIDE WATER	350.5 MGAL.	11.00	0.00	442.00	4862.00	100*
	Sub-Total			-		72380.70	

* Work completed on this item

PAY REQUEST NO. 3

L.C Hanson Co.

PROJECT: COALRIDGE MINE PROJECT   MONT A/E 86-46-133   Page 3 Of 4

ITEMIZATION OF QUANTITIES AND COSTS

ITEM NO.	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	% OF EST. QUANT. COMP.
17	FERTILIZER	2240.0 LBS.	1.00	2842.00	2842.00	2842.00	100*
18	SEED	601.0 LBS.	14.25	728.00	728.00	10374.00	100*
19	MULCH	92440.0 LBS.	0.28	0.00	110020.00	30805.60	100*
20	FARM FENCE - TYPE F-3	1007.0 L.F.	0.72	0.00	989.00	712.08	100*
21	FARM FENCE GATE	32.0 L.F.	5.00	0.00	32.00	160.00	100*
22	SINGLE PANEL	5.0 EACH	98.00	0.00	5.00	490.00	100*
23	DOUBLE PANEL	3.0 EACH	112.00	0.00	3.00	336.00	100*
24	REMOVE FENCE	565.0 L.F.	0.20	0.00	565.00	113.00	100*
	Sub-Total					45892.68	
	Total					115213.38	

* Work completed on this item

PAY REQUEST NO. 3

L.C Hanson Co.

PROJECT: COALRIDGE MINE PROJECT   MONT A/E 96-46-103   Page 4 OF 4

ITEMIZATION OF QUANTITIES AND COSTS

ITEM NO.	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	% OF EST. QUANT. COMP.
1	Change Order No. 1	1.0 L.S.	263.93	0.00	1.00	263.93	100*
2	Change Order No. 2	1.0 L.S.	3606.36	0.00	1.00	3606.36	100*
3	Change Order No. 3						
	a.Remove concrete foun-						
	dations & cisterns(W.O.#1)						
	CASE Backhoe	6.0 HRS.	50.00	0.00	6.00	300.00	100*
	b.Backfill subsidence						
	hole @ Meyer Mine(W.O.#2)						
	TS 14 Scraper	3.5 HRS.	75.00	0.00	3.50	262.50	100*
	CHAMPION 740 Blade	3.0 HRS.	72.00	0.00	3.00	216.00	100*
	Topsoil	48.0 C.Y.	6.35	0.00	48.00	304.80	100*
	c.Reconcilistion of Final						
	Quantities	1.0 L.S.	-1674.51	1.00	1.00	-1674.51	100*
	Total - Change Orders	-				3279.08	

Work completed on this item

2.12 CHANGE ORDER

Order No. 3

Date: December 7, 1987

Agreement Date: June 17, 1987

NAME OF PROJECT: COALRIDGE MINE PROJECT, SHERIDAN COUNTY, MT

MT A/E 86-46-133.

OWNER: Montana Department of State Lands - Abandoned Mine Reclamation Bureau

CONTRACTOR: Christensen Construction, Inc. RR 1 Box 23 Antelope, MT 59211

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MAT'LS	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
A.	Remove Concrete Foundation and Cisterns						
	Case Backhoe - 6 hours	---	---	50.00	---	50.00	$ 300.00
B.	Backfill Subsidence Hole at MEYER MINE SITE						
	TS14 Scraper - 3.5 Hours	---	---	75.00	---	75.00	262.50
	Champion 740 Blade - 3.0 Hours	---	---	72.00	---	72.00	216.00
	Topsoil - 48.0 C.Y.	6.35	---	---	---	6.35	304.80
C.	Reconciliation of Final Quantities						
	(See ATTACHED SHEETS)						- 1,674.51

TOTAL COST - MAT'LS, LABOR, EQUIPMENT & MISC.	- 591.21
OVERHEAD & PROFIT @ N/A %	-0-
GRAND TOTAL - THIS CHANGE ORDER	- 591.21

Original Contract Price	$119,887.89
Current Contract Price Adjusted by Previous Change Order	123,758.18
Cost This Change Order (+ or -)	- 591.21
New Contract Price Including This Change Order	$123,166.97

The completion date as set forth in the Contract Documents shall be (~~unchanged~~, increased, ~~decreased~~) by 13 calendar days.

The date for completion of all work will be October 27, 1987.

Description and Justification for Change:

1. ITEM A. - DESCRIPTION - Remove additional concrete foundations and cisterns discovered outside project construction limits, backfill associated holes. Backfill to be paid for at Contract unit price for subsidence backfill.

   JUSTIFICATION - The foundations and cisterns were mine related and their removal would make the project cleanup more complete. (Work completed under Work Directive Change No. 1)

   ITEM B. - DESCRIPTION - Backfill recently-collapsed subsidence hole at nearby MEYER MINE SITE and place topsoil. Backfill materials to be obtained at designated gravel pit near hole and transported to hole directly across stubble field. Topsoil to be imported and placed after the hole is backfilled.

   JUSTIFICATION - Adding work at the MEYER MINE to this project was determined to be the most efficient means to accomplish timely repairs at the MEYER site. (Work performed under Work Directive Change No. 2)

   ITEM C. - DESCRIPTION AND JUSTIFICATION - Reconciliation of actual quantities to estimated quantities because of varying field conditions.

   CONTRACT TIME: SEE ATTACHED SHEET

SURETY CONSENT

The surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by ______________________________ ($______________) (One hundred percent (100%) of the Change Order amount) and the penalty of the applicable Payment Bond or Bonds is hereby increased by ______________________________ ($______________) (One hundred percent (100%) of the Change Order amount).

COUNTERSIGNED BY MONTANA RESIDENT AGENT

____

____

SURETY

____

BY: ______________________________ (Seal)

Recommended by: L. C. Hanson Company Alan W. Nye, Engineer Date 12/7/87

Accepted by: ______________________________, Contractor ________

Approved by: ______________________________, Owner 1/22/88

Change Order No. 3
COALRIDGE MINE PROJECT
MT A/E 86-46-133

ITEM C

RECONCILIATION OF FINAL QUANTITIES

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	ACTUAL QUANTITY	CHANGE IN PRICE
4.	SALVAGE AND REPLACE TOPSOIL	31245.0 C.Y.	28681.0 C.Y.	-$ 2,435.80
5.	BANK CAVING	10.0 HOURS	12.0 HOURS	+ 174.00
6.	WATER INJECTION AND FLOODING	309.4 MGAL	146.0 MGAL	- 1,797.40
8.	BACKFILL BOREHOLE INTO VOID	1.0 EACH	2.0 EACH	+ 350.00
9.	CLOSE MINE OPENING - SHAFT	850.0 C.Y.	0.0 C.Y.	- 7,225.00
10.	DITCH EXCAVATION	7570.0 C.Y.	7220 C.Y.	- 280.00
11.	TYPE 4 BANK PROTECTION	110.0 C.Y.	82.0 C.Y.	- 378.00
12.	SUBSIDENCE BACKFILL	13815.0 C.Y.	12223 C.Y.	- 1,353.20
13.	SUBSIDENCE BACKFILL - BORROW	100.0 C.Y.	3779.0 C.Y.	+ 2,943.20
16.	PROVIDE WATER	350.5 MGAL	442.0 MGAL	+ 1,006.50
17.	FERTILIZER	2240.0 LBS	2842.0 LBS	+ 602.00
18.	SEED	601.0 LBS	728.0 LBS	+ 1,809.75
19.	MULCH	92440.0 LBS	11,0020.0 LBS	+ 4,922.40
20.	FARM FENCE - TYPE F-3	1007.0 L.F.	989.0 L.F.	- 12.96
		TOTAL - ITEM C -		-$ 1,674.51

Change Order No. 3
COALRIDGE MINE PROJECT
MT A/E 86-46-133

CONTRACT TIME

The Contract time will be adjusted as follows:

1.	Credit for inclement weather days -	+ 8 days
2.	Work on Item A - this Change Order -	+ 1 day
3.	Work on Item B - this Change Order -	+ 1 day
4.	Work on Change Order No. 2 -	+ 2 days
5.	Time allowance for additional work due to increased revegetation area -	+ 1 day
	TOTAL CONTRACT TIME ADJUSTMENT	+13 days

APPENDIX B

SLIDE LOG

COALRIDGE MINE PROJECT

1.	6/22/87	West Site - Shaft 13	Waste area, contaminated soil
2.	6/22/87	West Site - Shaft 13	Looking west
3.	6/22/87	North of Waste Pile #1	Tipple; contaminated soil area
4.	6/22/87	West end of project	Waste piles and backfill holes on Plan Sheet 1 of 4
5.	6/22/87	West end of project	Waste piles and backfill holes on Plan Sheet 1 of 4
6.	6/22/87	N.E. corner of site	Sequential series of overall site and primary Grade Area No. 1
7.	6/22/87	N.E. corner of site	Sequential series of overall site and primary Grade Area No. 1
8.	6/22/87	N.E. corner of site	Sequential series of overall site and primary Grade Area No. 1
9.	6/22/87	N.E. corner of site	Sequential series of overall site and primary Grade Area No. 1
10.	6/22/87	N.E. corner of site	Sequential series of overall site and primary Grade Area No. 1
11.	6/22/87	N.E. corner of site	Last of series
12.	6/22/87	Access gate in center of Grade Area No. 1	Buildings prior to demolition
13.	6/22/87	Access gate in center of Grade Area No. 1	Buildings prior to demolition
14.	6/22/87	Looking west across Area No. 1	Old mine haul road

15.	6/23/87	Backfill Hole #50	Used as garbage dump
16.	6/23/87	Grade Area No. 1	Building to be destroyed
17.	6/23/87	Grade Area No. 1	Looking SE toward highway
18.	6/23/87	Grade Area No. 1	Looking south @ pond area
19.	6/23/87	Old grainery foundation	Area No. 1 in background
20.	6/23/87	Grade Area #1	Looking east along boundary flags
21.	6/23/87	Grade Area #1	Looking north
22.	6/23/87	Grade Area #1	Old haul road looking east
23.	6/23/87	Grade Area #1	Airshaft #5 w/fan
24.	6/23/87	Grade Area #1	Hole in center of area w/water
25.	6/23/87	N.W. corner of Area 1	Looking across Area 1
26.	6/23/87	N.W. corner of Area 1	Looking east across Area 1
27.	6/23/87	Area 1	Stripping soil for burn area
28.	6/23/87	N.E. corner of Area 1	Subsided foundation area
29.	6/23/87	N.E. corner of Area 1	Looking south along highway
30.	6/23/87	N.E. corner of Area 1	Looking S.W. across Area 1
31.	6/23/87	Grade Area No. 1	Debris cleanup activities
32.	6/23/87	Just north of Area 1	Debris cleanup activities
33.	6/23/87	Just north of Area 1	Debris cleanup
34.	6/23/87	Grade Area 2	Looking north at Area 1

35.	6/23/87	Grade Area 2	Looking east at pond
36.	6/23/87	Pond area	Large subsidence which pond drains
37.	6/23/87	Pond area	Large subsidence next to pond
38.	6/23/87	Pond area	East side of pond
39.	6/23/87	Pond area	In sequence w/prior slide
40.	6/23/87	Grade Area 1	Scraper stuck in old shaft
41.	6/23/87	Grade Area 1	Piled iron debris
42.	6/23/87	Hoist/shed	Old stove and hoist
43.	6/23/87	Hoist frame	Landowners preparing to pull away
44.	6/23/87	Hoist frame	Landowners preparing to pull away
45.	6/23/87	Hoist and building	Collapsed structure
46.	6/23/87	Hoist and building	Preparation to move
47.	6/23/87	Near shed w/well	Caving foundation into hole
48.	6/23/87	Cistern	West of Hole 53
49.	6/24/87	Concrete foundation (west of Hole 53)	Wheel of loader exposing septic tank
50.	6/24/87	Concrete foundation (west of Hole 53)	Septic tank/drainfield of old dwelling
51.	6/24/87	Northern new fence	Looking down new fence
52.	6/24/87	Grade Area 1	Cat-Scraper push/load
53.	6/24/87	Grade Area 1	General operating
54.	6/24/87	Grade Area 1	General operating
55.	6/24/87	Shaft No. 12	Soil salvage/debris cleanup in back

56.	6/24/87	Shaft No. 12	Hole prior to flooding
57.	6/24/87	Shaft No. 12	Cat 225 hoe removing boulder
58.	6/24/87	Grade Area 1	"A coordinated construction crew"
59.	6/29/87	Collapse #1	Looking down hole w/mirror
60.	6/29/87	Shaft 15	Prior to flooding
61.	6/29/87	Shaft 15	After flooding
62.	6/29/87	Grade Area 2	Topsoil salvage
63.	6/29/87	Collapse #2	Surface view - scraper caused
64.	6/29/87	Collapse #2	Looking down hole
65.	6/29/87	Grade Area 1	Topsoil salvage
66.	6/29/87	Grade Area 1	Bank caving activities
67.	6/30/87	Area 2	Looking north at growing topsoil piles
68.	6/30/87	Shaft 15	Attempt to open shaft
69.	6/30/87	Waste Pile 1	Scraper windrowing slack
70.	6/30/87	Grade Area 2	Midway through soil salvage
71.	6/30/87	Access road, Area 1 to Area 2	Looking north from Area 2
72.	6/30/87	Grade Area 1	Air Force protecting skies above
73.	7/1/87	Contaminated soil area	Compare stripped vs undisturbed
74.	7/1/87	Waste Pile 1	General operations
75.	7/1/87	Shaft 15	After backfill w/waste
76.	7/1/87	Hole 50 (Sht 2)	Using waste as backfill

77.	7/1/87	Hole 9 (Sht 3)	Backfill activities
78.	7/2/87	Area 1	Debris burning
79.	7/2/87	Shaft #4	Placing pipestand
80.	7/2/87	Shaft #5	Pouring concrete over stand
81.	7/6/87	Waste Pile #1	After cleanup
82.	7/7/87	Hole #9 (Plan Sht 3)	Compacting backfill-waste
83.	7/8/87		"Inspector's Rodman"
84.	7/8/87	Pond/Grade Area 2	After topsoil removal
85.	7/8/87	Grade Area #1	Looking west after soil salvage
86.	7/8/87	Ditch C and A	Looking south along highway
87.	7/8/87	Ditch A	Looking north - water spreading
88.	7/13/87	Backfill hole	Loader "shaping" backfill
89.	7/13/87	Ditch A	Water spreading
90.	7/14/87	Pond	Removing topsoil from slope
91.	7/14/87	Pond	Preconstruction view of pond slopes
92.	7/14/87	Pond	Preconstruction view of pond slopes
93.	7/14/87	Pond	Preconstruction view of pond slopes
94.	7/14/87	Pond	Preconstruction view of pond slope
95.	7/14/87	Pond	Removing topsoil from slope
96.	7/14/87	"A" Ditch inflow to pond	Proposed location-preconstruction

97.	7/14/87	"B" Ditch - preconstruction	Proposed location of bank protection
98.	7/14/87	Area 2	Unloading hay mulch
99.	7/14/87	Backfill Hole #2	After flooding - drained
100.	7/14/87	Backfill Hole #2	Reflooding after sealed up
101.	7/14/87	Pond	Soil salvage
102.	7/15/87	"A" Ditch	Mid-completion - looking north
103.	7/15/87	Old foundation location	After cleanup and backfill
104.	7/15/87	Near Grade Area 1	Blading "C" ditch
105.	7/15/87	General overview	See Area 1 and to south
106.	7/15/87	Backfilled hole	Soil scarifying activities
107.	7/15/87	Waste Area #1	Soil scarifying
108.	7/16/87	Waste Area #1	Spreading soil in background
109.	7/16/87	Overview - Plan Sheet 1	Completed backfill and soil replaced
110.	7/16/87	Shaft #5	Excavating down to void
111.	7/20/87	Grade Area 2	Water erosion into void
112.	7/20/87	Pond area	Topsoil salvaged
113.	7/20/87	Grade Area 2	View across Area 2 w/Area 1 behind
114.	7/20/87	Pond area	Backfilling
115.	7/20/87	Pond area	Backfilling
116.	7/20/87	Pond area	Dynapac CA 25
117.	7/20/87	Ditch "A"	Scraper being loaded
118.	7/27/87	Area 1	Grading activities

119.	7/27/87	Area 1	Grading activities
120.	7/27/87	Area 1	Grading activities
121.	7/28/87	Grade Area 1	New hole found by truck
122.	7/28/87	Grade Area 1	Collapse #5
123.	7/28/87	Grade Area 1	Blading Ditch "A"
124.	7/28/87	Grade Area 1	Blading Ditch "A"
125.	8/3/87	Pond	Scraper excavating slope
126.	8/3/87	Pond	Slope flattening
127.	8/3/87	Hole 12h at pond	Backfilling up to pond slope
128.	8/3/87	Grade Area 2	General grading activities
129.	8/3/87	Grade Area 2	Looking NE at grading
130.	8/3/87	Grade Area 2	Looking east at grade area
131.	8/3/87	Grade Area 2	General grading equipment
132.	8/4/87	South side of pond	Soil salvage - hoe and scraper
133.	8/4/87	Pond	Dozer shaping slope
134.	8/4/87	Pond	Dozer back-dragging
135.	8/4/87	Pond/Ditch "B"	Hoe roughing in ditch
136.	8/5/87	Pond/Ditch "B"	Hoe preparing ditch for rock
137.	8/10/87	Area 2	Blade scarifying grade area
138.	8/10/87	Pond - Ditch "A"	Hoe excavating for rock
139.	8/10/87	Area 2	Replacing topsoil
140.	8/12/87	Pond - Ditch "A"	Rock placement
141.	8/12/87	Ditch "A" outflow	Ditch excavation w/blade
142.	8/12/87	Ditch "A" outflow	Ditch excavation w/blade

143.	8/12/87	Grade Area 1	Water application
144.	8/13/87	Ditch "A" - south	Replacing topsoil
145.	8/18/87	Area 1	Loading topsoil w/scraper
146.	8/18/87	Area 1	Loading topsoil w/scraper
147.	8/18/87	Area 1	Preparing to replace soil
148.	8/18/87	Area 1	Looking west over grade area
149.	8/18/87	Area 1	Scarified vs unscarified
150.	8/18/87	Area 1	Preparing for topsoil
151.	8/18/87	Area 1	Grade area prior to topsoil
152.	8/18/87	Area 1	Blade scarifying
153.	8/18/87	Area 1	Scarifying prior to topsoil
154.	8/26/87	Area 1	Fencing activities
155.	8/26/87	Waste Area 1	Mulch spreader at "initial" operation
156.	8/26/87	Waste Area 1	Mulch spreader
157.	8/26/87	Waste Area 1	Mulch spreader
158.	8/26/87	Grade Area 1	Looking east at "prepared" soil
159.	8/26/87	Grade Area 1	Looking east at "prepared" soil
160.	8/28/87	Grade Area 1	Looking west at mulch
161.	9/30/87	Access Road	Looking east at mulch
162.	9/30/87	Yard area	Mulch on old foundation
163.	9/30/87	Grade Area 1	Completed mulch
164.	9/30/87	Waste Area 5	Completed mulch
165.	9/30/87	Grade Area 1	Completed mulch

166.	9/30/87	Grade Area 1	Completed mulch
167.	9/30/87	Waste Area 1	Completed mulch
168.	9/30/87	Waste Area 1	Completed mulch
169.	9/30/87	Waste Area 1	Completed mulch
170.	9/30/87	Grade Area 1	Looking east at mulch
171.	9/30/87	Grade Area 1	Looking east at mulch
172.	9/30/87	Grade Area 1	Looking NE at mulch
173.	9/30/87	Grade Area 1	Completed mulch
174.	9/30/87		Closeup of mulch
175.	9/30/87	Grade Area 2	Completed mulch/looking north
176.	9/30/87	Grade Area 2	Looking northeast
177.	9/30/87	Grade Area 2	Looking east toward pond
178.	9/30/87	Grade Area 2	Looking east at mulch
179.	9/30/87	"A" Ditch outflow	Mulch in ditch
180.	9/30/87	"A" Ditch outflow	Looking toward pond
181.	9/30/87	Pond	Mulch on slope
182.	9/30/87	Pond	Mulch on slope
183.	9/30/87	"A" Ditch at pond	Rock and mulch
184.	9/30/87	Pond	Looking at north side
185.	9/30/87	"A" Ditch	Looking north at mulch
186.	9/30/87	"A" Ditch	Looking north at mulch
187.	9/30/87	"A" Ditch	Looking north at mulch
188.	9/30/87	Grade Area 1	Looking northwest at mulch
189.	9/30/87	Grade Area 1	Looking northwest at mulch
190.	9/30/87	Grade Area 1	Looking northwest at mulch
191.	9/30/87	"C" Ditch	Completed mulch

192.	9/30/87	Backfill #51	Mulch looking northeast
193.	9/30/87	Borrow area	Looking north along highway
194.	9/30/87	Area 2 access gate	Looking north at Area 2
195.	10/23/87	No-till drill	Brand named Marliss
196.	10/23/87	No-till drill	Brand named Marliss
197.	10/23/87	No-till drill	Close-up
198.	10/23/87	No-till drill	Close-up
199.	10/23/87	Tractor w/no-till	Preparing to seed
200.	10/23/87	Tractor w/drill	Seeding and fertilizing
201.	10/23/87	Tractor w/drill	Seeding and fertilizing
202.	10/27/87	Tractor w/spreader	Used to broadcast seed
203.	10/27/87	Tractor on ditch	Broadcast seeding-fertilizing
204.	10/27/87	Tractor on ditch	Broadcast seeding-fertilizing
205.	10/27/87	Tractor on ditch	Broadcast seeding-fertilizing
206.	10/27/87	Tractor on ditch	Broadcast seeding-fertilizing
207.	10/27/87	Close-up	Mulch, seed and fertilizer
208.	10/27/87	Grade Area 1	At completion
209.	10/27/87	Grade Area 1	At completion
210.	10/27/87	Grade Area 1	At completion
211.	10/27/87	Grade Area 1	At completion
212.	11/87	Project Site	Aerial oblique looking northwest
213.	11/87	Project Site	Aerial oblique looking northwest

APPENDIX C

ANALYSIS OF PROFESSIONAL SERVICE FEES
DATE OF PREPARATION: February 3, 1988
PROJECT: Coalridge

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PROFESSIONAL SERVICE	AMOUNT
* Data Gathering, Site Evaluation, Preliminary Engineering, Final Engineering, Bidding Documents	$46,040.94
* Construction Administration, Construction Inspection, Final Report Preparation	$26,088.17
L.C. HANSON CO. COSTS	$72,129.11
CONSTRUCTION COSTS	$123,166.97

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PERCENTAGE ANALYSIS

PRE-CONST. LCH CO COST/CONSTRUCTION COST	37.38%
CONST. & POST CONST. LCH CO. COST/CONSTRUCTION COST	21.18%
TOTAL LCH CO. COST/CONSTRUCTION COST	58.56%

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REMARKS: Services provided include lien determination, landowner consent, budget preparation, grant application, weed board approval, basic engineering, construction staking, contract administration, quantity accounting and full time resident inspection. This project involved extensive site survey and exploratory drilling leading up to two emergency projects. Much of the investigative work involved gathering of existing maps and records and verifying the limits of the mine workings and their potential impact on the adjacent highway and buildings.

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